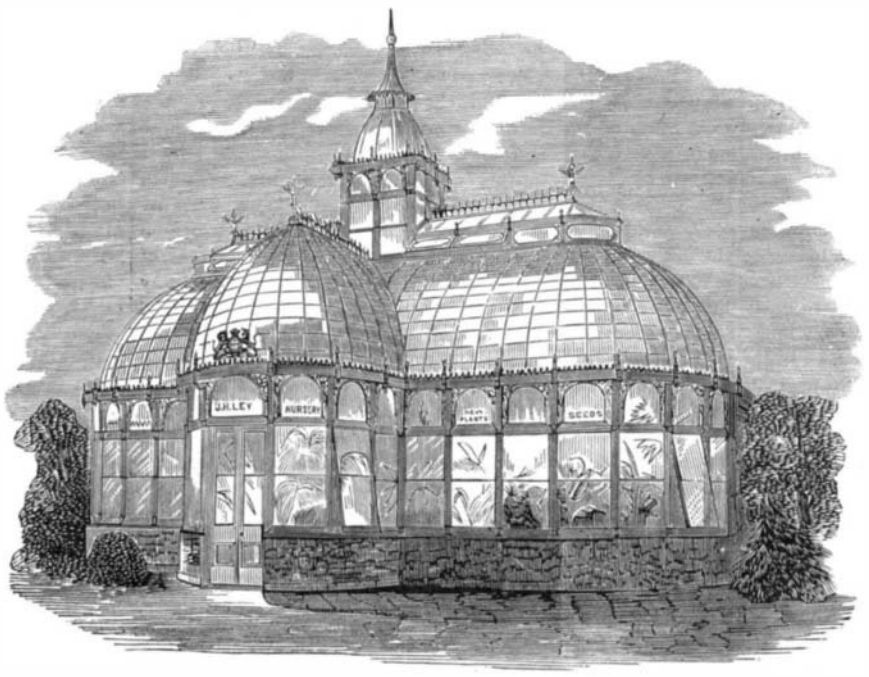
IMPROVED CONSTRUCTION OF CONSERVATORIES.

Our illustration shows a conservatory or greenhouse built entirely of wood and glass, according to a plan originated by Mr. W. H. Lascelles, of London, England, a builder who has obtained some renown among horticulturists. The roof of the house is curvilinear, the flat panes of glass being set in frames of bent wood, their angle to the perpendicular being gradually increased as the summit of the roof is approached. The result is a structure of very ornamental appearance, which can be erected by any capable carpenter. Iron, of course, will continue to be used where the framework can be readily and cheaply obtained; but that a very graceful building can be erected without the employment of expensive materials will, we think, be shown by our engraving.



A MODEL CURVILINEAR GREENHOUSE.

A Chance for Ice Machines.

It is a fact that the ice crop this winter, along the Hudson, is almost a total failure. Ice men have waited patiently for moderately thick ice to thicken; but in lieu of this taking place, the spells of warm weather, which have succeeded the few cold snaps, have only rendered the ice still less suitable for harvesting. Thus far, we learn, about one-tenth of the usual crop has been gathered. Even when a full harvest is stored, hardly a summer goes by but that complaints regarding the extortions of the large ice companies are frequent. The householder in this city paid about 70 cents a week for 30 lbs. of ice delivered daily during last summer, when an abundant store of ice was on hand. Recently the ice companies have fixed the price at 60 cents per 100 lbs.; and probably, not merely on account of the failure of the crop, but also because of the unusual influx of transient visitors to this section of the country, the cost of ice next summer will reach figures not only higher than the above but higher than ever before. A good opportunity seems to be offered for inventors of ice machines. Without doubt powerful apparatus of this description, established in New York and Philadelphia, and capable of producing large quantities of ice, could be worked during the hot months both to the advantage of the public and with large profit to the manufacturers.

New Fire-Extinguishing Apparatus.

The new and splendid building belonging to the New York *Tribune* newspaper is one of the largest and most substantial structures in this city. It is eleven stories high, built of fire-proof materials, with iron beams and hollow brick arches for the floors; and it would almost be deemed necessary to provide special apparatus for the prevention of fires. But the proprietors, with a commendable desire to protect the property of their many tenants, as well as their own, have lately put in a novel fire-extinguishing apparatus which is ingeniously arranged and effective in operation. It was made by the Champion Fire-Extinguishing Company of Louisville, Ky. A number of gentlemen recently assembled in the *Tribune* composing rooms to witness the first trial of it. The engine is placed in the sub-cellar of the building, and consists of a cylindrical tank, holding about 180 gallons of water, and hung on pivots in such a way as to be inverted on the lifting of a latch rod. About 60 lbs. sub-carbonate soda are mixed with the water, and in the tank is a jar containing 28 lbs. sulphuric acid. When the tank is inverted, the chemicals are mingled together and produce carbonic acid gas, by the expansive force of which the waste water is driven out with a pressure of 150 lbs. to the square inch. From the tank to the top of the building runs a standpipe, to which is attached a stop cock and hose in each story. A wire rope, connecting with the trip, also runs through the building. In case of a fire, it is only necessary to pull the wire rope on any floor, open the stop-cock, and direct the steam on the fire, the whole occupying about 20 seconds.

In the first trial, the trip was pulled from the composing room, eleven stories above the engine, and 20 seconds afterward a stream of water charged with carbonic acid gas was pouring from the nozzle of the 50 foot hose. With an elevation of 176 feet, and a length of pipe and hose amounting to 251 feet, a stream of water was thrown horizontally 75 feet from the nozzle against a stiff wind. It was estimated by those present that the stream of water could be kept up about half an hour. Several interruptions were made, as the stream was directed from different windows. After the force of the engine was exhausted, the spectators went to the basement, and witnessed the tripping of the tank. The tank was then refilled and made ready for use, the work occupying about ten minutes.

The main point in which this apparatus is believed to be superior to all others is the quickness with which the stream can be directed on the fire after it is discovered. A single person in any story, on discovering the flames, can immediately do the work which with other engines requires the aid of additional persons, and usually a journey to another room and back again In an ordinary building, several stories in hight, before a person could descend from the top to the basement, or warn the engineer of the danger, the fire might gain such a headway that no power could extinguish it. The apparatus is moreover simple in construction, and so made that it will not fail to act at a moment's notice, though allowed to stand for ten years without a change of chemicals. Another important advantage is that the action of chemicals, which come up mingled with the water, is such as to aid materially in stopping the fire. They do not seem to extinguish so much as instantly to smother it, and so render the charred wood incombustible. The fire does not return—even if it continues to rage a foot or two away—to the spot on which the spray has once touched it.

WASPS.

In the *Annual Register of Rural Affairs*, for 1876, we find the following article, from the pen of Professor Cook, of the Michigan State Agricultural College, on the value of the wasps in the economy of Nature, and their marvelous instinct: "If we consider as venial the injuries wrought by the strong-jawed insects belonging to the several families of the wasps, upon our grapes and other tender-skinned fruits—which sin is often laid to the bees—we may regard the wasps as wholly our friends. Not only the paper-making wasps, but also the numerous mud wasps, are without exception, so far as the writer has observed, predaceous insects. And what a strange instinct it must be that leads many of these wasps to spread for their prospective young a rich feast of tender grasshopper steak or cut-worm chops, when forsooth they never deign even to taste such vulgar viands, but only lap the more delicate sweets distilled by leaf and flower! Yet the common bee is just as wise, aye, and thoughtful too of its young, as it gathers the pollen nourishment for their sustenance, while it only tastes the delicious sweets of the hive.

Fig. 1.—VESPA MACULATA.

"The paper wasps, *vespa maculata* (Fig. 1) place the insect food in the cells with their young, while the fine mud wasps, so common around wells and muddy places throughout our country, build large, roomy mud cells in which they place the caterpillar, locust, or other insect, and then close up the cell, but not till they have left an egg with the canned meat. What a striking example of parental care thus to seal up so carefully the aliment provided for the young wasps, which very likely the parent wasp would never see! Yet in the *sphex ichneumonea* (Fig. 2) that beautiful shining wasp, with long peduncle to the abdomen, and often so handsomely colored with blue, orange, yellow, or red, we see even a more striking example of parental care. These wasps

Fig. 2.—SPHEX ICHNEUMONEA.

are possessed, like all other species of wasps, of a powerful sting; yet, when they attack and subdue their prey, preparatory to supplying the yet unborn, they never give a fatal thrust, but only paralyze their victims. These are then carried to a previously prepared hole in the ground, placed in its bottom, in company with an egg, after which the earth is filled in; and what is very curious, the wasp uses her abdomen as a beetle, pounding the earth, so that by no possibility may her prospective offspring meet with disturbance. Here, then, the grub, caterpillar, or moth is not only buried alive, but is to be eaten alive. So extraordinary is the mother's instinct of parental foresight that her yet unhatched progeny is insured not only a perfect sanctuary for a home, but also meat that is fresh and untainted."

The Effect of Waves.

It is generally believed that at a moderate depth the influence of heavy waves ceases, and that during a hurricane all is quiet a few fathoms beneath the surface. If this be correct, why should a swell show such a marked increase in hight when it rolls over the edge of soundings?

On the parallel of Cape Clear, in longitude 15° W., seamen are familiar with this phenomenon, although the depth is nearly 500 fathoms; at times it is so marked that the dead reckoning may be checked by carefully noting the increase in the depth of the hollow of the waves Shortly after the edge of sounds is passed, the sea becomes more regular, and consequently less dangerous to deeply laden vessels

Any one who has watched, during a moderate breeze, the commotion of the water close to a quay wall can form a good idea of the ocean when it receives its first check against the Irish Plateau; the great waves twist around each other, run up and down in heaps, and then fall suddenly, as if bereft, in a great measure, of their forward motion.

Again, it is a well-known fact that during a "norther" in the Gulf of Mexico the frailest vessels weather out the storm if they can cross the edge of the Campeachy Banks, a striking proof that, at a depth of over fifty fathoms, there is sufficient abrasion to destroy the force of the heaviest wave in a very effectual style. On one occasion the writer witnessed this remarkable fact by running from a turbulent sea into comparative smooth water in this locality.

On George's Shoals, off Nantucket, during a heavy gale, the New York pilots and masters of coasting vessels assert that sand is frequently left on deck after a sea has broken on board, although the depth of water may be twelve or fourteen fathoms. It must require an enormous amount of ebullition at the bottom to raise such a dense matter to the surface through such a distance; for a cubic foot of ordinary sea sand weighs about 100 lbs.

In this wild spot the tide, which frequently runs with a velocity of three miles per hour, would assist the lifting power of the wave if running counter to it. During a winter gale, when the strong springs are thus running, the confusion of the sea is indescribable, although the depth may be thirty fathoms. The shortness of the sea (that is to say, of the distance beween the crests of the waves) on the banks of Newfoundland, where the soundings are from 30 to 50 fathoms, is noticed by all the navigators of the Western Atlantic, as it reduces the speed of an ocean steamer more than the heavier waves of deeper water, with a similar force of wind, will do. It is evident that this can only arise from the friction of the bottom, as the waves increase in hight when deeper water is reached a short distance to the eastward.

In the Gulf Stream north of the Straits of Bemine, after a "norther" has blown a few hours, the surface of the sea is covered with lanes of weed, although only a few patches might have been seen before the commencement of the gale. As these lanes are often at a considerable distance from shoal water, which lies at right angles to the direction of the current and wind, it is evident that they must have grown near the spot where they float, and been torn from their moorings by the mechanical force of the waves.—*W. W. Kiddle, in Nature.*

Disinfection for Yellow Fever.

Whenever a case of yellow fever occurs in New Orleans, the streets surrounding the square are sprinkled with Calvert's No 5 carbolic acid diluted in 50 parts of water. A large sprinkler on wheels is used for the roadways, and the sidewalks are sprinkled by hand. The grounds of neighboring yards are similarly treated, and the privy vaults disinfected with a solution of zinc-iron chloride. At the termination of the case by death or removal, the infected apartments are fumigated with sulphurous acid or chlorine. The extent of the ground disinfected is according to the lapse of time since the appearance of the fever. The extent of the infection along the ground is about forty or fifty feet daily, so that after some days' delay the whole square must be enclosed with a disinfecting band and the enclosed surface sprinkled.

The Microscope Again a Detector of Crime.

The microscope has recently completed a circumstantial evidence against a murderer, forging the links so strongly that numerous witnesses, swearing to an alibi, were of no avail in the criminal's behalf. The latter, a Polish Jew, enticed a female of his own sect to a cornfield, and there killed her with a butcher's knife. Suspicion being directed to the man, close examination of his garments elicited, first, blood spots, second, soil and vegetable matter on his shoes, and lastly, shreds of woolen fabric sticking to his coat. To all of these substances the microscope was applied. The blood was declared to be human, and its nature and probable age determined; the soil was pronounced identical with that of the field in which the murder took place, the particles of vegetable matter were recognized as bits of corn stocks and leaves, and the identity of the dyed wool with the material of which the girl's shawl was made was established. This, together with other evidence adduced, despite the ingenious theories put forth by the defense, convinced the jury, who found the prisoner guilty, thus consigning him to the gallows.